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|--------------------------|-------------|-----------------------|---------------------|------------------|
| APPLICATION NO.          | FILING DATE | FIRST NAMED INVENTOR  | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
| 10/619,648               | 07/14/2003  | Steven Robert Hetzler | ARC920030040US1     | 8642             |
| 55508                    | 7590        | 06/02/2006            | EXAMINER            |                  |
| JOSEPH P. CURTIN, L.L.C. |             |                       | CHAUDRY, MUJTABA M  |                  |
| 1469 N.W. MORGAN LANE    |             |                       | ART UNIT            |                  |
| PORTLAND, OR 97229-5291  |             |                       | PAPER NUMBER        |                  |
|                          |             |                       | 2133                |                  |

DATE MAILED: 06/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/619,648             | HETZLER ET AL.      |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Mujtaba K. Chaudry     | 2133                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 10-12 is/are rejected.
- 7) ☒ Claim(s) 7-9 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/14/2003</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

The references listed in the information disclosure statement (IDS) submitted on July 14, 2003 have been considered. The submission is in compliance with the provisions of 37 CFR 1.97.

### ***Oath/Declaration***

The Oath filed December 15, 2003 complies with all the requirements set forth in MPEP 602 and therefore is accepted.

### ***Drawings***

The drawings are objected to because:

- In Figure 1, units P, Q and R should be labeled as "check storage units" to be accordance with the specification.

Appropriate correction is required.

***Specification***

The specification, on page 1, refers to several copending patent applications that should be identified by patent application and/or patent numbers.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention. In line 4, it should be clear that the array controller is coupled to the three storage units and three check units in parallel. Inserting "in parallel" after "coupled" would clarify the claim language.

Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention. It is not clear what the claim intends to state as a limitation. Failures have to occur before data is lost. In other words, if data is lost then a failure has occurred. This claim cannot be valued on the merits until it is clarified.

Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention. Data has to be recovered from a partially readable storage unit. It cannot be recovered if the data is completely lost. This claim cannot be valued on the merits until it is clarified..

Claim 12 recites the limitation "the data subsystem" in line 2. There is insufficient antecedent basis for this limitation in the claim.

***Allowable Subject Matter***

Claims 7-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and overcoming any issues under 35 USC 112 stated herein.

***Claim Rejections - 35 USC § 103***

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over King et al. (USPN 6530004).

As per claim 1, King et al. (herein after: King) substantially teaches a method and apparatus for dynamically expanding a storage system, particularly a RAID (Redundant Array of Independent Disks) set based storage system, while assuring data integrity during the expansion process. For example, redistributing of data in a data storage system. This embodiment of the method includes the steps of: identify data in a destructive zone of the storage system; migrating data before reaching the destructive zone from source storage devices to destination storage devices; copying data onto a number of backup buffers; mirroring data backed up in the copying step onto free space in the storage system; migrating data backed up in the mirroring step to

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destination storage devices; repeating the steps of migrating, copying, and mirroring, until data that will be in the destructive zone is migrated out of the destructive zone; and migrating remaining data from the source disks onto the destination disk. Particularly, King teaches Figure 1 an array controller 106, a plurality of original disks N (analogous to data storage units) and a plurality of added disks M (analogous to check storage units).

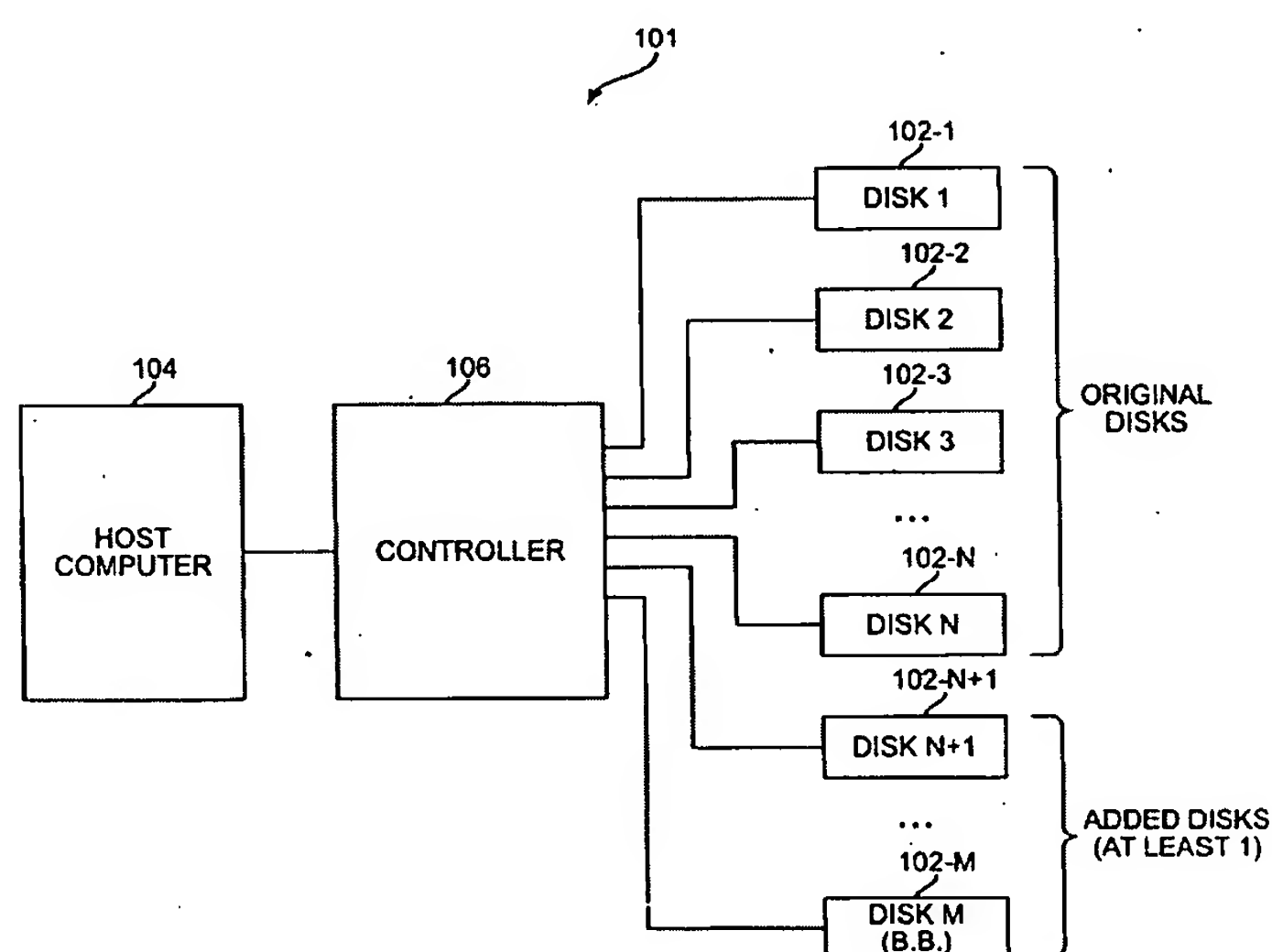


FIG. 1

King does not explicitly teach to have three storage units and three check units as stated in the present application.

However, the Examiner would like to point out that have exactly three storage units and three corresponding check units is a matter of obvious engineering design choice. Therefore it would have been obvious to limit the number of storage units and number of corresponding check units in King to three as is suggested in the present application. This would have been obvious since three is a number, which is included in a plurality as is taught by King. Further

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more, having three corresponding check units would be efficient for the array controller to correct any erasures in the storage unit with the corresponding three check units.

As per claims 2-6, King substantially teaches, in view of above rejections, RAID 3 + 3 system. The Examiner would like to point out that it is well known in the art for data to stored in RAID to use some type of code such as symmetric Maximum Distance Code, a Winograd code, a Reed-Solomon code or an evenodd code, which are all known in the art of RAID systems.

As per claim 12, King substantially teaches, in view of above rejections, RAID 3 + 3 system. The Examiner would like to point out that the check units are used to recover any data stored in the data storage units that is lost.

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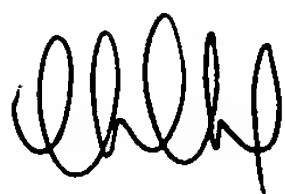
***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Additional pertinent prior arts are included herein for Applicant's review.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mujtaba K. Chaudry whose telephone number is 571-272-3817. The examiner can normally be reached on Mon-Thur 9-7:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert DeCady can be reached on 571-272-3819. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Mujtaba Chaudry  
Art Unit 2133  
May 19, 2006



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